Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached pages are captioned "**Version With Markings To Show Changes Made**."

Applicant notes with appreciation the indication of allowable subject matter in claims 53, 64, 65, 76, 79, 84, 94, 101, 108, 109, 117, and 118. For the reasons set forth below, Applicant respectfully submits that all of the claims should be allowed.

Claims 49, 56, 66, 67, 69, 77, 80, 86, 94, 95, 97, 104, 110, and 115 stand rejected under 35 USC §112, second paragraph for indefiniteness. Several antecedent basis problems have been noted in claims 56, 67, 69, 86, 94, 104, and 115. These antecedent basis problems have been remedied in the present amendment.

The Examiner further objects to the clause "using radio resources from the pool" recited in a number of claims as allegedly rendering the claims "vague since its exact meaning is ambiguous." Similarly, the Examiner objects to the language "reservation of radio resources from the pool." Applicant respectfully traverses these two rejections.

There is antecedent basis for the clause "using radio resources from the pool." For example, the preamble of claim 49 sets forth that the radio network communications are performed "using radio resources from a pool of radio resources that may be allocated" to one or more various mobile radio terminals. The term "radio resources" is used throughout the radio communications industry and can include any resources necessary to conduct a radio communication over a radio interface. Non-limiting examples of radio resources include radio channels such as frequencies, timeslots, and spreading codes. Radio resources may also include hardware-type resources such as base station transmitters and receivers, antennas, data and signal processing equipment, etc. In practical radio communication systems, the amount of radio resources are limited, e.g., there is a finite amount of radio bandwidth. There is a limit to *how much* information can be transmitted over a particular bandwidth, and a limit to *the rate* at which it can be transmitted. To maximize the use of the radio bandwidth, that bandwidth is "shared" with a large number of users. Bandwidth is "used" or allocated for use when needed for a particular mobile radio communication. Claim 49 is not limited to a specific radio resource, i.e., the use or reservation of radio resources is not limited to a particular one.

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A person of ordinary skill in the radio communications art, after having reviewed the specification, would certainly understand the two phrases objected to by the Examiner in the claims. Indeed, it appears that the Examiner's objection goes to claim scope rather than ambiguity. A particular radio resource is either used or it is not used to support a radio communication -- there is no ambiguity. Indeed, Applicant does not want to limit the use of the radio resources to a specific one because the invention is directed to a packet session with a mobile radio that includes multiple application flows where each application flow may well use different radio resources or in a different fashion in that same packet session.

Accordingly, Applicant respectfully submit that the claims are definite and distinct within meaning of §112, second paragraph. Withdrawal of the rejection is respectfully requested.

Claims 49-52, 54-63, 66-75, 77-78, 80-83, 85-93, 95-100, 102-107, 110-116, and 119-121 stand rejected under 35 USC §102(b) as allegedly being anticipated by newly-applied Dupont (U.S. Patent No. 5,729,542). This rejection is respectfully traversed.

To establish that a claim is invalid due to anticipation, the Examiner must point out where each and every limitation of the claim is found in a single prior art reference. *Scripps Clinic & Research Found. v. Genentec, Inc.*, 927 F.2d 1565 (Fed. Cir. 1991). Every limitation contained in the claims must be present in the reference, and if even one limitation is missing from the reference, then it does not anticipate the claim. *Kloster Speedsteel AB v. Crucible, Inc.*, 793 F.2d 1565 (Fed. Cir. 1986). The Examiner fails to satisfy this burden for the rejected claims based upon Dupont.

Dupont discloses an invention in the context of packet communications with a mobile station. The specific problem addressed by Dupont is how to apply different levels of access to wireless service to different priority mobile radios. Dupont controls access by varying access probabilities for mobile subscribers that have different priorities. A base station determines access probabilities, for example a high probability and a low probability if there are two classes of mobile subscribers, in response to a current rate of access attempts for two different subscriber priority classes, also referred to as Quality of Service (QoS) classes. These access probabilities are transmitted to the mobile subscribers over a broadcast or control channel and used by the mobile subscriber to determine when to access "a

communication resource, e.g., an uplink channel." Column 2, lines 53-54. In this, Dupont states "as a result of this contention-prioritization scheme, an expedited access is achieved by higher priority units." Column 2, lines 56-58.

Although access to a cellular services is certainly an important problem, it is not relevant to the present invention. The present invention relates to *reserving resources* for a packet *session* involving a mobile radio that includes *plural application flows*. As explained in the specification, an individual application flow corresponds to a stream of data packets that is distinguishable as being associated with a particular host application. An example of an application flow is an electronic mail message. Another example is a link to a particular Internet service provider to download a graphics file from a web site. Both of these application flows may be part of a packet session established for a mobile radio terminal. Such a session is also referred to as *multimedia session* since more than one type of media is involved.

Rather than reserve a *single* quality of service for the packet session and *all* of its individual application flows, the present invention permits definition of a *different* quality of service for *each* individual application flow in the session. Further, the quality of service for each application flow in the packet session may be separately reserved, separately monitored, and/or separately regulated. In addition, the present invention provides a dynamic quality of service reservation mechanism for a mobile packet session. Functioning as a quality of service "aware" network layer, it permits integration with other data service architectures, such as the Internet, to provide an end-to-end integrated service where quality of service can be specified from the mobile radio all the way to a fixed host in an "end-to-end communication."

None of the above-described features or advantages is addressed in Dupont.

Turning to independent claim 49, Dupont fails to disclose or suggest:

> establishing a *packet session* over the radio interface for the mobile radio terminal using radio resources from the pool *during which plural application flows* are communicated with an external network entity, *each application flow having a corresponding stream of packets.*

The Examiner refers to Fig. 1 of Dupont which simply shows a mobile radio communicating with a base station coupled to a BSC 115 and a GSN 120 to a packet data network 140. There is no illustration of a *multimedia session* with a mobile radio. Reference is also made to column 2, lines 42-48, replicated here for convenience:

> [a] presently preferred embodiment of the invention is a system for controlling access through the use of varying access probabilities for subscribers of varying priority. This would typically start with a serving base station determining access probabilities (e.g., p_{hi} and p_{lo} where there are two classes of subscribers) in response to known system parameters like the current rate of access attempts for each quality of service class.

There is no disclosure in this text of a *packet session* that includes *plural application flows each corresponding to a corresponding stream of packets.* This text simply refers to controlling access to the system. A single data flow has not even been set up (let alone plural application flows).

Dupont further fails to disclose or suggest

> defining *a corresponding quality of service parameter for each of the plural application flows* [in the packet session] such that different quality of service parameters may be defined for different ones of the application flows.

The Examiner refers to the same text quoted above. Quality of service is mentioned only in the context of determining a particular mobile's access probability. In other words, if a mobile radio has a high quality of service (high priority), it is given a higher probability of access, and for a lower quality of service (low priority), the mobile subscriber is given a lower probability of access. Session application flows are <u>not</u> disclosed.

Dupont further fails to disclose "determining whether radio resources from the pool are available to support the quality of service parameters *defined for each of the plural application flows* [for the packet session]." The Examiner refers to Fig. 4 which shows persistence parameters associated with a particular priority. Again, these parameters are access control parameters, i.e., the mobile radio is simply trying to obtain access to the mobile communications system in order to set up some sort of communication. Dupont never gets to the point where he describes the type of communication being requested, let alone

whether that communication is a session that includes plural application flows. Access priorities and contention-based prioritization schemes to expedite access are not relevant to the claimed invention.

Turning to independent claim 66, Dupont fails to disclose

> establishing a *packet session* for the mobile radio host ... during which *plural application flows* are communicated between the mobile host and an external network entity, *each application flow having a corresponding stream of packets.*

Nor is there disclosure of "making a reservation request for *a particular quality of service for an individual application flow associated with the packet session.*" Dupont fails to disclose or suggest "establishing a *logical bearer* between the mobile radio host and the gateway node *to bear plural ones of the individual application flows having different corresponding quality of services.*" The Examiner refers to column 3, lines 56-61 repeated here for convenience:

> After a time-out period and no response, MS 210 again retries access (state 335). Upon allocation, access controller 22 notifies both MS 210 and data receiver controller 224 of the subchannel allocation, and the data transmitter controller 214 and data receiver controller 224 commence transfer of the data (state 340).

All this text says is that when the mobile makes another attempt to access the system, it succeeds and is assigned a channel to transfer data. There is no discussion of establishing a logical bearer between the mobile host and gateway node, and there certainly is no discussion of a logical bearer bearing "plural ones of the individual application flows having different corresponding quality of services."

Turning to independent claim 77, Dupont fails to disclose or suggest

> establishing a *packet session* ... for a mobile radio host ... during which *plural application flows* are communicated with an external network entity, *each application flow having a corresponding stream of packets.*

Nor does Dupont disclose "defining a corresponding quality of service parameter for *each* of the plural application flows such that *different quality of service parameters may be defined for different ones of the application flows.*"

The final step where "the serving node merging packets from different sessions with the same quality of service destined for different mobile radio hosts within a same geographical service area" is not even addressed by the Examiner in the action and is not found in Dupont.

Turning to independent claim 80, Dupont fails to disclose a mobile radio terminal that is configured

> to establish a data packet communications *session* ... during which two application flows, corresponding to two data packet applications, communicate two data packet streams corresponding to the two data packet applications with another entity in an external network during the session.

Nor is there disclosure in Dupont of a radio packet network "reserving a different quality of service class for each of the two data packet streams associated with the mobile terminal *during the session.*" There is no teaching or suggestion in Dupont of reserving radio resources "to support the two data packet streams [in the session] with different quality of service classes."

Turning to claim 95, Dupont lacks a mobile radio terminal that comprises

> a reservation controller configured to reserve a different quality of service for different ones of plural data packet streams associated with corresponding applications operating at the mobile terminal and *established during a data session* when the mobile radio terminal is attached to the radio packet network.

Nor is there disclosure in Dupont of such a reservation controller

> also being configured to request from the radio network, reservation of radio resources from the pool to support the different quality of services defined for the different data packet streams.

Turning to claim 97, there is no disclosure in Dupont of a radio packet network node that includes electronic circuitry configured to perform the claimed tasks. For example, there is no disclosure of a radio packet network node that

> establish[es] a *packet session* ... for the mobile radio terminal ... during which *plural application flows* are communicated with an external network, *each application flow having a corresponding stream of packets.*

Nor is there disclosure of such a node defining

> a corresponding quality of service parameter for each of the plural application flows such that *different quality of service parameters may be defined for different ones of the application flows.*

Consequently, it follows that Dupont fails to disclose such a node determining if there are sufficient radio resources available "to support the quality of service parameters defined for each of the plural application flows."

Turning to claim 110, there is no disclosure in Dupont of the claimed radio packet network node configured to perform the following tasks:

- establish a *packet session* during which *plural application flows* are communicated with an external network entity, each application flow having a corresponding stream of packets
- make a reservation request for a particular quality of service for an individual ones of the application flows associated with the packet session
- establish a *logical bearer* between the mobile radio host and the gateway node to bear *plural ones of the individual application flows having different corresponding quality of service classes.*

Turning to independent claim 115, there is no disclosure of the claimed radio packet network node being configured "to *merge packets from different sessions with a same quality of service destined for different mobile radio hosts within a same geographical service area.*" This claim is not addressed by the Examiner in the Official Action. In the preamble of claim 115, it is explained that a packet session is established for the mobile radio host

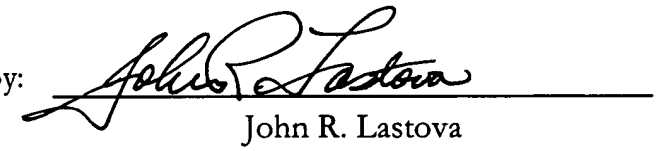
> during which plural application flows are communicated with an external network entity, each application flow having a corresponding stream of packets, and a corresponding quality of service parameter as defined for each of the plural application flows such that different quality of service parameters may be defined for different ones of the application flows.

For the reasons set forth above, Applicant respectfully submits that the present application is now in condition for allowance. An early notice of same is requested. However, if the Examiner elects to maintain any rejection based upon Dupont, the

Examiner is respectfully requested to identify how Dupont's method for prioritizing mobile subscriber accesses to a system is relevant to the present invention that relates to providing dynamic quality of services to plural application flows which are part of a single packet session involving a mobile radio.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: 

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

50. *(Amended)* The method in claim 49, further comprising:

delivering packets corresponding to [said] each application flow from the external network entity to the mobile radio terminal in accordance with the defined corresponding quality of service.

56. *(Amended)* The method in claim 55, further comprising:

making available for the packet session each quality of service [class] to which a user of the mobile radio terminal subscribes.

66. *(Amended)* In a mobile radio communications system having plural mobile radio hosts communicating with a radio network over a radio interface using radio resources from a pool of resources that may be allocated to the plural mobile radio hosts where a mobile host communicates packet data with an external network by way of a packet gateway node associated with the radio network and a packet serving node associated with the radio network, a method comprising:

establishing a packet session for the mobile radio host over the radio interface using radio resources from the pool during which plural application flows are communicated between the mobile host and an external network entity, each application flow having a corresponding stream of packets;

making a reservation request for a particular quality of service for an individual application flow associated with the packet session;

determining whether the reservation request can be met with radio resources from the pool; and

if so, establishing a logical bearer between the mobile radio host and the gateway node to bear plural ones of the individual application flows having different corresponding quality of services [service classes].

67. *(Amended)* The method in claim 66, further comprising:

classifying and scheduling packets corresponding to [said] each application flow from the external network to the mobile radio host over the bearer in accordance with the [defined] quality of service [class] corresponding to the application packet stream.

80. *(Amended)* A mobile radio communications system, comprising:

a radio network;

plural mobile radio terminals configured to communicate with the radio network over a radio interface using radio resources from a pool of radio resources that may be allocated to the plural mobile radio terminals;

one mobile radio terminal configured to establish a data packet communications session over the radio interface using radio resources from the pool during which [plural] two application flows, corresponding to [running] two data packet applications [during the session, and], communicate during the session two data packet streams corresponding to the two data packet applications with another entity in an external network, and

a radio packet network coupled between one mobile radio terminal and the external network entity for reserving a different quality of service class for each of the two data packet streams associated with the mobile radio terminal during the session;

wherein radio communication resources from the pool are reservable to support the two data packet streams with different quality of service classes.

86. *(Amended)* The mobile radio communications system in claim 80, further comprising:

a database node that stores subscription information for the mobile radio terminal specifying whether the mobile radio terminal may request a quality of service for specific application data packet streams,

wherein the radio packet network [node] checks the subscription information in the database node before a quality of service class is reserved.

87. *(Amended)* The mobile radio communications system in claim 80, wherein the radio packet network includes:

a serving node coupled [connected] between the gateway node and the mobile terminal;

a gateway node coupled [connected] between the serving node and the external network entity.

94. *(Amended)* The mobile radio communications system in claim 87, wherein the serving node includes:

a first set of queues storing packets having the same quality of service class and data packet communications session;

a second set of queues storing packet having the same quality of service class and the same mobile terminal; and

a third set of queues storing packets being served in [the] a same geographic area and having the same quality of service class.

95. *(Amended)* In a mobile radio communications system including a radio network coupled to a radio packet network coupled to an external network where plural mobile radio terminals communicate over a radio interface with the radio network using radio resources from a pool of radio resources that may be allocated to the mobile radio terminals, a mobile radio terminal comprising a reservation controller configured to reserve a different quality of service for different ones of plural data packet streams associated with corresponding applications operating at the mobile radio terminal and established during a data session when the mobile radio terminal is attached to the radio packet network, the reservation controller also being configured to request from the radio network, reservation of radio resources from the pool to support the different quality of services defined for the different data packet streams.

104. *(Amended)* The radio packet network node in claim 103, wherein the [a] network packet layer bearer permits relay of data packets between the external network entity and the mobile radio terminal.

115. For use in a mobile radio communications system having plural mobile radio hosts communicating with a radio network over a radio interface using radio resources from

a pool of radio resources that may be allocated to the plural mobile radio hosts, where the mobile radio hosts communicate packet data with an external network by way of a packet gateway node and a packet serving node associated with the radio network, wherein a packet session is established over the radio interface for a mobile radio host using radio resources from the pool during which plural application flows are communicated with an external network entity, each application flow having a corresponding stream of packets, and a corresponding quality of service parameter is defined for each of the plural application flows such that different quality of service parameters may be defined for different ones of the application flows, a radio packet network node, comprising:

electronic circuitry configured to merge packets from different sessions with [the] a same quality of service destined for different mobile radio hosts within a same geographical service area.